ABSTRACT OF THE DISCLOSURE

Upon initialization, a VPC is set up between edge nodes. A control processor of each node creates an IP address/VPC mapping table using IP routing information and an address mapping table mapping correspondence between IP addresses and ATM addresses and supplied by a network management system. A gateway assigns a VCC to each packet input to the network. A sending-side edge node inputs the packet to the VPC corresponding to its destination by referring to the IP address/VPC mapping table. A transit node performs packet switching over VP. A receiving-side edge node transfers each packet to the gateway corresponding to its destination. If a series of packets meet a predetermined condition in a given edge node, its control processor sends VCC information to input interfaces of the edge node so that the packets are switched by an ATM switch in the edge node without intervention of the control processor.